A NEW SPECIES OF *PANICUM*

Panicum nehruense Jauhar et Joshi, spec. nov.*

Gramen perenne, robustum, agreste, dense hirsutum, moderate vel alte caespitosum, modeste florens, hex aploideum ($6x = 2n = 54$), 115-140 cm longum, habitu semi-erecto vel decumbente. *Culmi* 10-17-nodosi, geniculato-ascendentes, profuse ramosi supra. Nodi pubescentes picti colore 'Ox-Blood-Red' (Ridgway, 1912). *Folia* dense hirsuta, nervo medio vix conspicuo; margines rosei, ciliati pilis longis; folium secundum 17-35 cm longum, 5-8 mm latum. Vaginae scabridae, dense hirsutae pilis longis tuberculo insidentibus. *Ligula* 1.2-1.9 mm longa, membranacea dense ciliata.

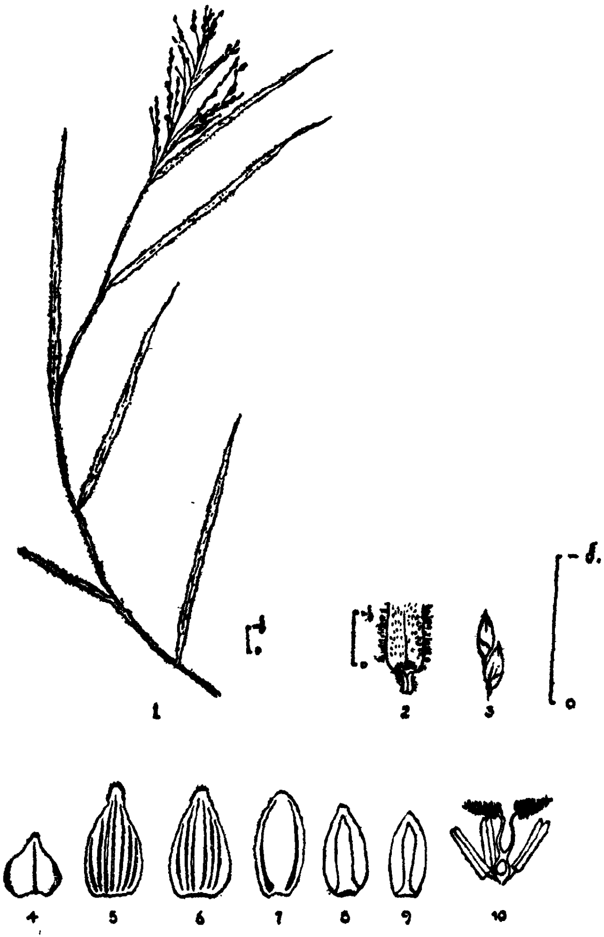

Fig. A. Showing a culm with panicle, spikelets and constituent parts of a spikelet of *Panicum nehruense* Jauhar et Joshi.
1. Culm with semi-effuse panicle. Note marked hirsuteness of the plant. 2. A portion of the highly pubescent leaf showing densely ciliate ligule. 3. A pair of spikelets showing acuminulate apices. 4. Lower glume with serrulated apex. 5. Upper glume. 6. Lower lemma. 7. Lower palea with heavily serrulated margins. 8. Upper lemma. 9. Upper palea. 10. Pistil and stamens.
Note the inconspicuously-nerved glumes and lower lemma.

Panicula semi-effusa vel effusa, 14-24 cm longa, 7-18 cm lata, sparse ramosa. *Spiculae* 2.5-2.8 mm longae, acute vel acuminate apiculatae, tinctae colore brunneo-rubro, 2-florae, flore inferiore staminato, superiore vero hermaphrodito. *Gluma* inferior brevis, acuta, ad 1.2 mm longa, uninervia; *superior vero gluma* et *lemma inferius* 5-8 nervia, nervis vix conspicuis; *palea inferior* binervia, debiliter dentata ad latera, *superius vero lemma* coriaceum, nitens. *Stigmata* brevia, paulum plumosa, rosea. *Antherae* 1-1.4 mm longae, aurantiacae.

Typus initio ex Australia obtentus; typus, *P. P. Jauhar* 9, positus in herbario sectionis botanicae Instituti Investigationis Agricolae Indiae ad New Delhi. Isotypi deponentur in herbario ad Dehra Dun

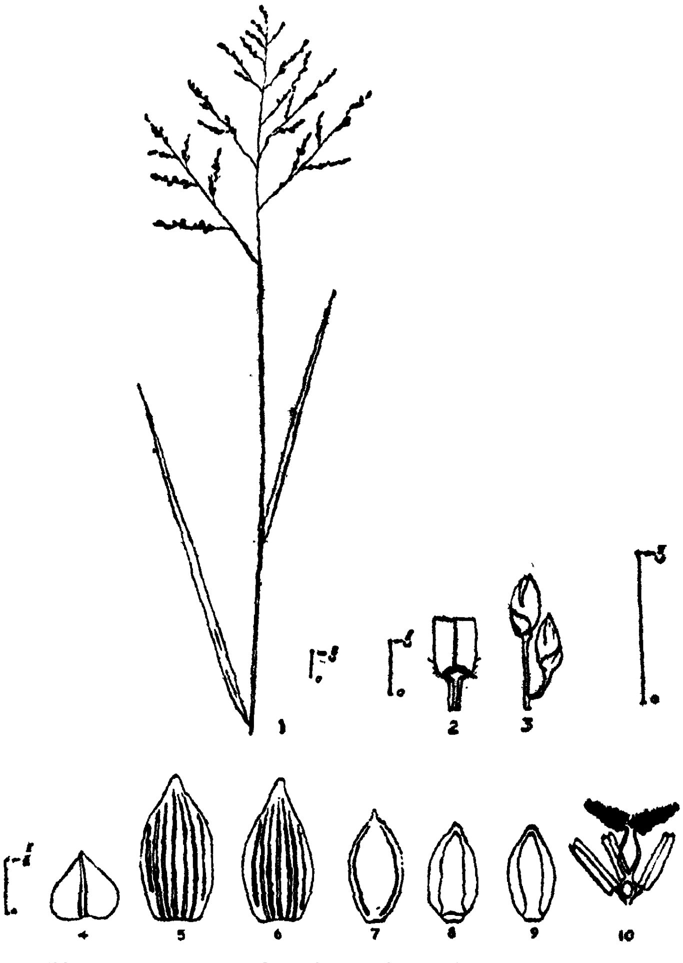

Fig. B. Showing a culm with panicle, spikelets and constituent parts of a spikelet of *Panicum coloratum* L.
1. Culm with effuse panicle. 2. A portion of leaf showing ligule. 3. A pair of spikelets. 4. Lower glume. 5. Upper glume. 6. Lower lemma. 7. Lower palea with serrulated margins. 8. Upper lemma. 9. Upper palea. 10. Pistil and stamens.
Note conspicuous nervation of the glumes and lower lemma.

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*The species has been named in honour of the late Prime Minister of India, Shri Jawaharlal Nehru, whose ashes have become an indistinguishable part of the Indian Soil.

(*P. P. Jauhar 9A*), ad Calcuttam (*P. P. Jauhar 9B*) et in herb. Kewensi in Anglia (*P. P. Jauhar 9C*).

Panicum nehruense Jauhar et Joshi, spec. nov.

A robust, coarse, densely hirsute, moderately to highly caespitose, shy-flowering, hexaploid ($6x = 2n = 54$), 115-140 cm tall, perennial grass with semi-erect to decumbent growth habit. *Culms* 10-17-noded, geniculate-ascending profusely branched above. Nodes pubescent, coloured with 'Ox-blood-red' pigmentation (Ridgway, 1912). *Leaves* densely hirsute (Fig. A), mid-rib almost inconspicuous to less conspicuous; leaf-margins pink and fringed with long hairs; second leaf 17-35 cm long and 0.5-0.8 cm broad. Leaf-sheaths scabrid, densely hirsute covered with long, tubercle-based hairs. *Ligule* 1.2-1.9 mm long, membranous, densely ciliate.

Panicle semi-effuse to effuse, 14-24 cm long and 7-18 cm broad, scantily branched. *Spikelets* 2.5-2.8 mm long, acutely to acuminulately pointed, tinged with maroon pigment; 2-flowered, the lower staminate and the upper hermaphrodiate. *Lower glume* short, pointed, upto 1.2 mm long, 1-nerved; *upper glume* and *lower lemma* (lemma of the staminate floret) 5-8-nerved, nerves being less conspicuous; *lower palea* 2-nerved, feebly dented at the sides; *upper lemma* coriaceous, glossy. *Stigmas* short, feebly plumose, rose-coloured. Anthers 1.0-1.4 mm long, orange yellow.

Apart from the above distinct morphological characters, the following are the salient epidermal features which appear to be of diagnostic value: Very long "long cells" (175-225μ long and 19-23μ broad) with their anticlinal walls conspicuously rippled and cuticularised; occurrence of large, spherical, thick-walled "short cells" pointed on one side; emergence of long, bi-cellular micro-hairs from in between the long cells.

The type was isolated from a composite seed lot of *Panicum coloratum* obtained from Jodhpur, where it is reported to have been introduced from Australia. On the basis of cytotaxonomic investigations by the authors, the specimen has been named as *Panicum nehruense* sp. nov. Typus, *P. P. Jauhar 9*, deposited in Herb. Botany Division, Indian Agricultural Research Institute, New Delhi; *isotypi* to be deposited in the Herbaria at Dehra Dun (*P. P. Jauhar 9A*), Calcutta (*P. P. Jauhar 9B*) and in Herb. Kew, England (*P. P. Jauhar 9C*).

This species is allied to *Panicum coloratum* L. (Fig. B), and has long been misidentified under that taxon. It is, however, distinct from *P. coloratum* in its growth habit, morphological features, characters of epidermal pattern and cytological characteristics including the chromosome number. The following table shows the broad points of distinction, in bare outline, between the new species and *P. coloratum* (for detailed description, *see* Jauhar, 1963):

The species does not cross *Panicum coloratum*, all concerted efforts to obtain a hybrid having invariably failed. Polyploidy seems to be an important factor in the reproductive isolation.

Character	*P. coloratum* L.	*P. nehruense* Jauhar et Joshi, sp. nov.
Morphological characters :		
1. Growth habit	Erect, rarely decumbent	Mostly decumbent
2. Plant hairiness	Leaves, leaf-sheaths, nodes and internodes glabrous to rarely glabrascent	Leaves, leaf-sheaths, nodes and internodes densely hirsute, covered with long, tubercle-based hairs
3. Nodal and internodal pigmentation	Absent or rarely feeble pigmentation present	Very intense 'Ox-blood-red' pigmentation
4. Length of spikelet	2.6-3.6 mm	2.5-2.8 mm
5. Intensity of nervation on glumes and lower lemma	Highly conspicuous	Less conspicuous
Foliar epidermal pattern :		
6. Long cells	Short to medium-long "long cells" (100 to 150μ long) with their anticlinal walls feebly to conspicuously rippled and cuticularised	Very long "long cells" (175-225μ long) with their anticlinal walls conspicuously rippled and cuticularised.
7. Short cells	Saddle-shaped to rectangular, rarely spherical, short cells rarely pointed on one side	Mostly spherical thick-walled large "short cells" generally pointed on one side
Cytological features :		
8. Nature and level of ploidy	Mostly allotetraploid $2n = 36$ (a diploid race, $2n = 18$, was reported by Johsi, Patil and Manchanda, 1959)	Allohexaploid $2n = 54$

ACKNOWLEDGEMENTS

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A NOTE ON *PITYROGRAMMA CALOMELANOS* IN INDIA

Pityrogramma calomelanos (L.) [Link Handb. Gew. 3. 20. 1833 (=*Acrostichum calomelanos* L., Spec. Plant., 2. 1702, 1753)] is a tropical American fern which has run wild within quite recent times in the tropics and the subtropics of the whole world. During the past few decades this fern has been reported to occur in a wild state from a number of places in India. Chandra (1963) in his taxonomic account of the genus *Pityrogramma* in India has emphasised that the first published and authentic record of the species dated back to 1934 by Mehra from Sikkim and 1935 by d'Almeida from Bombay; and probably Beddome (1892) reported the species as *Pellaea calomelanos* Link from N. W. Himalayas, near Almora. Recently Nayar (1964, p. 203) has clearly mentioned that "among early workers, Hooker (1868—under *Pteris*) and Beddome (1892—under *Pellaea*) have reported *P. calomelanos* in India." This note is intended to comment on the above mentioned recent works with reference to the oldest known record, taxonomy and distribution of *Pityrogramma calomelanos.*

If one was to locate the earliest published record of the fern from India, Blatter and d'Almeida in 1922 (p. 176) had very clearly indicated its occurrence (under *Gymnogramme*) from Bombay Presidency and Nilgiris, with the comments "run wild in and around Bombay". In the Bombay Presidency these authors collected the fern from Khandala and Kampoli; Dango forest (Surat); Bombay Island, Malabar Hill, Sewrie, Rowli Hill, Sion Wood. From the Himalayan range the first published record is by Mehra in 1932 and not 1934 as cited by Chandra (1963) and Nayar (1964).

There is no mention of *Pityrogramma calomelanos* in the earlier classic works on Indian ferns by Clarke (1880) and Beddome (1883, 1892). The contention of Chandra (1963) as well as of Nayar (1964) that Beddome (1892) had mentioned the species under *Pellaea* and of Nayar (1964) that Hooker had placed it under *Pteris* is erroneous. *Pellaea calomelanos* (Sw.) Link (=*Pteris calomelanos* (Sw.) is a widely different species met with in the N.W. Himalayas (cf. Clarke, 1880; Beddome, 1892) and shares with *Pityrogramma calomelanos* only the specific epithet. Further Hooker (in fact Hooker and Baker, 1865-1868, and 1874, p. 152) in the Synopsis Filicum referred from India to only *Pellaea calomelanos** and that too under the genus *Pellaea* and not *Pteris.* That Hooker had no inclination to consider it as *Pteris* is clear from Clarke (l.c.) who commented "Sir W. J. Hooker expresses great surprise that Kunze supposed this species a *Pteris* rather than a *Pellaea*".

Hooker and Baker (1874, p. 385) did, however, include *Pityrogramma calomelanos* in the Synopsis Filicum under the genus *Gymnogramme,* but not from India. It may be added that *Pellaea calomelanos* is characterized by the ultimate segments naked on both surfaces, and the sori in a broad marginal line soon hiding the narrow membranaceous involucre, whereas *Pityrogramma calomelanos* is characterized by white ceraceous covering on the undersurface, and the sporangia are distributed all over the veinlets without an indusium.

Apart from the earliest published record of the

**Pellaea calomelanos* (Sw.) Link is known in literature as *P. hastata* (Thbg.) Prantl (cf. Christensen, 1906, p. 479, 480) with *Pteris hastata* Thbg. (non Sw.) & *P. calomelanos* Sw. as synonyms. (cf. Hooker & Baker, 1874 ; p. 152 and Beddome, 1892, p. 104). *Pteris hastata* Thbg. is not synonymous with *Adiantum hastatum* L.f. (cf. Schelpe, 1963).